VANCE, (AP MORGAN.)

Femoral Osteotomy for the Correction of Deformity resulting from Hip-Joint Disease.

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FEMORAL OSTEOTOMY

FOR THE CORRECTION OF DEFORMITY RESULTING FROM HIP-JOINT DISEASE.*

By AP MORGAN VANCE, M. D.,
LOUISVILLE, KY.

In the part of the country from which I come we have to deal with more of the different deformities resulting from neglected cases of hip and knee joint diseases than are met with in the larger cities, where greater attention has been given to the treatment of this class of troubles in the earlier stages.

It has been my fortune to treat a number of these unortunates, and it is to relate my experience in a clinical way that I am here to-day. There are one or two points I wish to emphasize. While in New York, a little over a year ago, I spoke to a distinguished surgical friend concerning subcutaneous osteotomy, and was astonished at his saying he had never mustered sufficient courage to do this operation; that he always made a large open wound, so that he could see what he was doing. This was a new idea to me, as I could not see any reason for the additional work. I have broken a number of bones subcutaneously, and have

* Read before the American Orthopædic Association at its second annual meeting.

never had a feeling of any doubt of exactly what was being done, and have never had a single mishap, every case in its progress being practically a simple fracture.

I freely confess that I will break a man's femur subcutaneously with as little misgiving as to the outcome as I would divide his tendo Achillis.

The procedure will be described during the relation of some eight cases of femoral osteotomy, all the patients having practically reached adult life, the justifiability of the operation having been proved by the results.

Of the eight cases to be reported, five were operated upon for deformity the result of hip disease, and the remaining three for deformity following disease at the knee.

The latter cases have proved to me how much better it is to correct, by a bone section, deformity existing at the knee along with slight motion and the patella fixed, than it is to interfere with the formerly diseased joint in an effort to better the condition.

Cases Nos. II and VI have been reported before in the "New York Medical Journal," but, to complete a series, I will refer to them again, as illustrating the advantage of subcutaneous osteotomy.

Case I. *Subtrochanteric Osteotomy (?) in a Young Woman aged Sixteen.*—Carrie H. came under my observation first in the spring of 1883, giving this history: Two years before she had been attacked with acute pain and evidences of inflammation about the left hip. She was under the care of skillful surgeons in the town where she lived, in a northwestern territory, who repeatedly aspirated a large abscess which formed, the sac being located on the outer side of the thigh. The abscess finally healed, and, under tonic and constructive treatment, the child gradually recovered, being confined in bed for nearly a year, with weight and pulley attached to the limb, and sand-bags also used to keep the limb in the best position and the joint at rest. Notwithstanding their extreme care, the hip became stiff, as is

often the case in extreme adduction; so, when she began walking, there was a practical shortening of four inches and a half or five inches, and, of course, a very marked lateral curvature of spine and obliquity of pelvis.

For the relief of this deformity the parents brought their daughter East, and, after a thorough examination, I advised non-interference, but told them, as they were going further east to New York and Boston, to see surgeons at each place. They did see Dr. Sayre and some Boston surgeon, who agreed with me that there was bony ankylosis at the hip, and the result was too good to be interfered with. But, after three years had passed and the girl had reached womanhood, the deformities grieved the parents very much, and, after communicating with me, who had hinted at bone-breaking as the only chance of correction, they came East again, and on April 16, 1886, the bone section (?) below the trochanter was done as follows: A firm, well-padded block of marble was pressed against the inner side of the thigh as high up as the perinæum would allow. A very sharp, narrow chisel was pushed through the soft parts, the blade in the axis of the limb, the skin at the same time being drawn forward. When the bone was reached, the chisel, being turned, was driven through until the hard substance on the opposite side was reached; this was partially divided; the chisel was then slightly withdrawn and directed posteriorly and then anteriorly. Without withdrawing the instrument, an effort was made to complete the fracture by using the block for a fulcrum and the femur as a lever, an assistant fixing the pelvis firmly to the table, the patient being on the right side. This failed, even after great force had been applied, for the reason that the adduction was so great the fulcrum could not be placed opposite the weakened point, but below. Further work with the chisel was then done. The instrument became very firmly fixed, a loud snap being produced when it was moved. All present believed it had been broken, but, on withdrawing it, to our relief all of it appeared. The effort to fracture was repeated, and the bone gave toward further adduction; then very easily, when force was applied, toward abduction. The deformity was completely overcome, and the limb was incased in plaster of

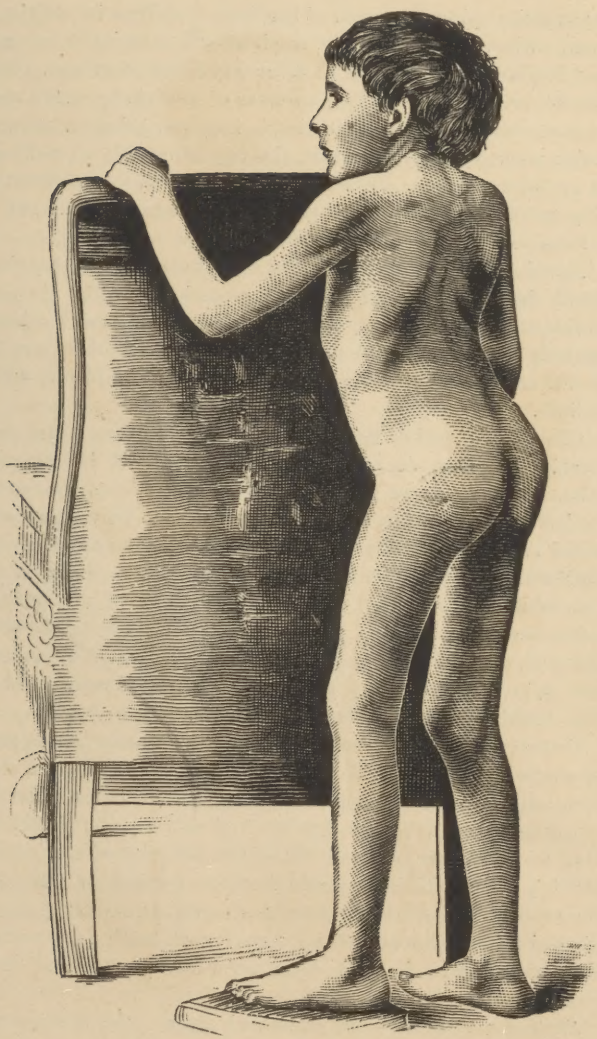
Case I.

Paris. Not a bad symptom arose during the after-treatment. She was able to be up in a rolling-chair by the fourteenth day, and walked on crutches by the eighteenth, when a lighter tar-board splint, reaching only to the knee, was substituted for the heavy plaster of Paris. At the end of the sixth week she was allowed to walk without crutches, the limb being restored to a position which let the foot reach the floor; at the same time the pelvis was horizontal. After she had walked very well for a week, using a cane when on the street, the mother noticed a tendency toward the old position when she was tired. Upon examination, to our utter astonishment, we found considerable motion at the hip joint on this side, which allowed the limb, from prolonged habit, to drop into adduction. The question arises, Were we deceived in thinking the bone was broken, or was the marked deformity corrected entirely by the renewal of motion of what was undoubtedly a fibrous ankylosis, or did I break both the bone and the ankylosis? I lean to the latter opinion, not believing that the deformity could be so easily overcome without a fracture. The fact that the chisel was withdrawn destroyed my guide to what took place at the site of its introduction. As the result is, the patient is much better off, being relieved of the short limb and lateral curvature, with a movable instead of a stiff hip.

Case II.—June 11, 1884, H. C., aged nine years, the subject of spinal caries and true hip disease, both long since spontaneously cured, the hip being ankylosed by bone at an angle of less than 90° with the pelvis, the deformity resulting being greater because of the spinal disease in high dorsal region, which took up most of the power of compensation in the lumbar spine.

This boy could stand with difficulty by holding on to his left knee and right hip, but could not walk, his mode of locomotion being on all-fours. The patient was an inmate of the Methodist Orphans' Home, and ready consent to the operation was obtained; and, on the date mentioned, it was performed in the presence of the visiting physicians of the institution and several other professional friends. The patient was anæsthetized by Dr. Senteny, and the operation was performed just as in Case I, except that tenotomy of the muscles going to the ante-

CASE II.—Before operation.



CASE II.—After operation.

rior superior spinous process of the ilium was done in addition, when, without much difficulty, the limb was brought down and fixed in plaster of Paris, 90° of deformity being overcome. The wounds were dressed with compresses of absorbent cotton and the case was treated as one of simple fracture, going on to conclusion without a bad symptom, the boy being able to walk at the end of five weeks. He walks any distance without difficulty, using an elevated shoe to compensate for about an inch and a half shortening of the affected limb.

April 3, 1888.—This boy is seen and examined. He has discarded the high shoe and can walk remarkably well. He has developed in a general way very much, having attended school regularly since the operation, four years ago, and takes part in the different sports of the other boys without any difficulty with his limb.

Case III.—April 6, 1888, Nick M., aged fourteen years and a half, from near Versailles, Ky. A case of old hip disease which had been cured for six or seven years—in malposition. The left thigh was flexed to about 90° with the pelvis and adducted very much, making this limb practically four inches and a half short, including an inch and a half real shortening from a pathological dislocation. There was very slight motion between the femur and the pelvis. The boy walked by aid of a cane with marked limp, and became very tired when he undertook to go any distance. There had been an abscess, and a deep cicatrix was present below the trochanter.

Osteotomy was performed just as in the preceding cases, and tenotomies were done of all the muscles resisting abduction and extension. The limb was placed in a plaster-of-Paris splint in a position of abduction, so that the inch and a half real shortening would be compensated for by the obliquity of the pelvis resulting when the limb would become vertical in walking. There was no mishap during the after-treatment, and the patient returned to his home at the end of four weeks with a protective splint of leather, which was worn for a week longer and then discarded.

September 7, 1888.—Boy examined again. He walks with remarkable ease and comparatively little limp. When standing,

he rests his weight on this limb. Has three quarters of an inch added to his shoe. The motion at the joint has allowed the abduction to be almost overcome, and the pelvis is nearly horizontal. The whole limb has been greatly developed in the five months since the operation, and the patient is in much better general condition. This is the first case of deformity of the hip with motion remaining that I have corrected by osteotomy. As I stated in the opening of this paper, I should prefer this to interfering with the formerly diseased joint.

Case IV.—Jennie H., aged fifteen, came under observation on July 1, 1885, in the female surgical ward of Louisville City Hospital, where she had been operated upon for a supposed fistula in ano. Soon after this I was asked by Dr. Douglass Morton to treat the case for a deformity the result of an old hip disease. The left limb was found greatly deformed, the girl being unable to get the foot to the ground. The femur was flexed to an angle of 90° with the pelvis and completely adducted. There were a number of old scars about the trochanteric region, and the examination under chloroform proved the joint to be ankylosed by bone. There was a sinus along the left side of the rectum, and the ordinary operation by incision had been done without any good resulting. On careful examination, it was discovered that the source of the discharge was an old fistulous tract through the buttock toward the joint site. I considered there must be dead bone at the bottom of this, though none was discovered. By Nélaton's test the thigh was estimated to be an inch and a half short. I determined to correct the angle of deformity despite the existence of the discharging sinus, as the patient was in excellent general condition, and I felt sure I could break the femur below the trochanter without disturbing the old joint. On July 20, 1885, in the presence of several of the attending staff, I did the operation just as described in Case I, except the fulcrum, instead of being placed opposite the point of entrance of the chisel, on account of the extreme adduction, had to be placed posteriorly in the region of the gluteal fold, and consequently the difficulty of applying force was greater and the fracture harder to complete. This was done, however, without very great trouble, and the limb brought into the best position

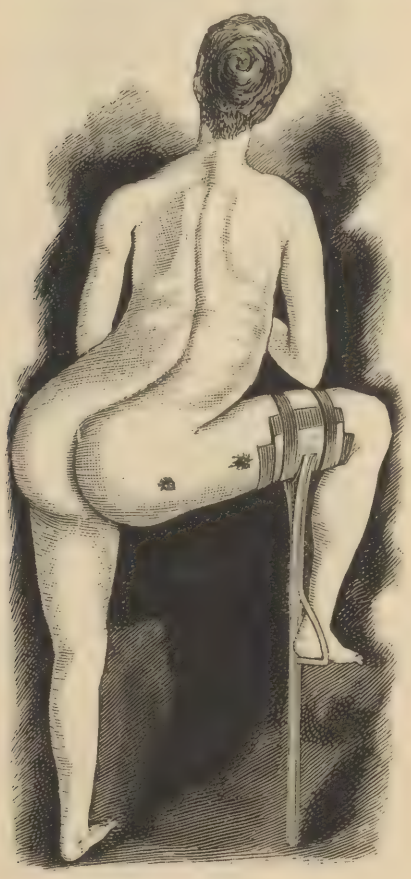
for future use, after tenotomy of all the muscles in the adductor region which showed any resistance; also the muscles going to the anterior superior spinous process of the ilium which became tense when extension was made.

The limb was then fixed in plaster of Paris from the toes to the umbilicus. There was no bad symptom, and the patient returned to her home on the fourteenth day, after the application of a lighter splint, which was removed two weeks later, and moderate use of the limb commenced July 30, 1888. The patient has rounded off into complete womanhood; gives a history of having had no trouble with the limb; can walk any distance without difficulty. The sinus still discharges watery fluid in small quantities. She wears an elevated shoe of an inch and a half; little or no limp. I advised her to have the sinus laid open and scraped before getting married, which is contemplated.

Case V.—June 7, 1886, Miss T. H., tailoress, aged thirty-two. This woman had been the subject of true hip disease when eight years of age. At the same time there was disease of the right wrist and the shoulder of the same side, small pieces of bone being exfoliated. The right hip was the one affected, as will be seen by referring to the sketch. It was about the worst-looking deformity of the kind I had ever seen; the femur was flexed to the last degree and completely abducted; the knee could not be extended beyond a right angle, adaptation of the flexors having taken place during the twenty-two years. She had walked on a popliteal crutch. The pelvis was obliqued to the right, and the spine greatly curved.

This patient had been an eye-sore to me for years on the streets, and finally was referred to me by Mr. Mathews, an artificial-limb maker, to whom she had applied for the repair of her crutch. On the above-mentioned date I divided the right femur below the trochanter, and restored the limb to a position to be used to the best advantage under all the circumstances in walking after the fashion of other people. Both hamstrings were divided, and the muscles attached to the anterior superior spinous process of the ilium also, great force being necessary to bring the limb down; the skin on the anterior aspect of the

thigh looked glazed, it was put so much on the stretch. A plaster splint was applied, as in the other cases. Convalescence was uninterrupted so far as the firm union of the bone was concerned, but there was a tendency to swelling of the leg, together



Case V.—Before operation.

Case V.—After operation.

with anæsthesia of the parts supplied by the anterior crural nerve for six months or more.

Examined September 7, 1888: She is in better health than ever before, and can walk long distances without using a cane. Has no trouble of any kind with the limb. She wore for a while a shoe on the right foot of an inch elevation against my advice. She now wears an ordinary shoe. The limb was left in sufficient abduction to compensate for the actual shortening and part of the obliquity of the pelvis. The charcoal sketches before and after the operation give a very perfect representation of this case.

Case VI.—A. B., aged seventeen years, came under observation in November, 1884, for treatment. There were the history and the evidence locally of an old inflammation of the left knee joint, dating back to early childhood. The limb was greatly deformed, and he walked with painful inconvenience. The knee was found with very little motion, flexed at an angle of 135°, the leg being very much rotated in its relationship to the thigh; there was combined with this marked genu valgum. The compensating deformity of the foot was quite great and walking painful.

The procedure of dividing the bone was exactly as in the preceding cases, the final steps being much more difficult because of the limited motion at the knee, and the fear that it might be further damaged if too much strained by the use of the leg as a lever; but I succeeded by having the upper part of the bone fixed by a very strong assistant, then, grasping the condyles in both hands, with the application of sudden force downward, using the same fulcrum as before, the fracture was completed and the deformity overcome, after tenotomy of the external ham-string tendon. The limb was dressed in plaster, and went on to firm union as a simple fracture.

The young man now walks anywhere without difficulty, and is the possessor, comparatively speaking, of a comely limb, a compensation of an inch and a half being added to the shoe.

Case VII.—Mr. N., clergyman, aged thirty two, had been the subject of inflammation of the right knee when a child, resulting in a permanent deformity, very much like that described in Case

VI—flexion, combined with rotation of the leg on the thigh, and knock-knee. He came, he said, to consult me in regard to the possibility of having the deformity overcome, as it was particularly awkward in a public speaker. I proposed bone-breaking as a possible remedy, and after some discussion he consented. His consent was more difficult to obtain because he had consulted with an eminent surgeon in Virginia, who had warned him against letting anybody meddle with his knee. On May 10, 1886, the operation was commenced just as in the preceding case, the bone being completely sectioned, however, without the use of manual force. Hardly had two strokes of the mallet been given before a complete fracture was produced. I anticipated a retardation in the process of repair, but no trouble was experienced, and in the usual time he was able to use the limb.

I saw him on the street in April last, and he walked with little limp, and if it had not been for this, one would not notice anything the matter with him. While he is standing there is no reason to suppose him at all lame. His limb gives him no trouble.

Case VIII.—April 15, 1888, John S., aged fifteen, telegraph operator, Hopkinsville, Ky. The deformity, a repetition of that in the two preceding cases, was the result of an inflammation of the right knee of only three years' standing. The procedure was carried out as in Cases VI and VII with the same result. He returned to his home on the sixteenth day wearing a posterior leather splint. There has not been sufficient time passed since the operation to determine the result in this case, but I expect just as useful a limb as in the other cases.

Cases VI, VII, and VIII illustrate how much good can be done by a bone section in a class of cases that, in my hands, have been very unsatisfactorily treated in any other way unless excision is done. You have a knee in which the patella is fixed, with flexion, rotation of the leg on thigh, and genu valgum, without the saving clause of bony ankylosis of the tibia to femur, but with limited motion, with no control of that motion. The history of these patients as to the utility of the affected limb is always the same—

constantly recurring pain and disabling at the least misstep or stumping of the toe. Any movement which puts a strain on the crippled joint brings about the same result, calling for a return to the cane or more often to the crutch.

By a bone section and the substitution of an angle above for those at the knee, and at the same time rotating the leg, we place the tibia and fibula in the same axis with the femur and restore the foot to a position much better suited for walking. By the improved relationship the intermittent strains are prevented and adaptation of the ligamentous structures allowed to take place, a firmer and much better joint being the result.

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